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IS 1448-132 (1989): Methods of test for petroleum and its products, Part 132: Determination of moisture content in raw and calcined petroleum coke [PCD 1: Methods of Measurement and Test for Petroleum, Petroleum Products and Lubricants]

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“Knowledge is such a treasure which cannot be stolen”

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IS : 1448 [P : 132] - 1989
Adopted 3 February 1989

Indian Standard (Reaffirmed 2002)

METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS

[P : 132]

DETERMINATION OF MOISTURE CONTENT IN RAW AND CALCINED PETROLEUM COKE

(First Reprint AUGUST 1997)

UDC 665.777.4 : 543.812

1. SCOPE

1.1 This standard describes two analytical test procedures for the determination of moisture content in raw and calcined petroleum coke. Method **A-1** is applicable for the determination of moisture content (as received) in raw petroleum coke. Samples obtained in **5.2.2** of IS : 1447 (Part 4)-1989* are used in this test. Method **A-2** is for determining the moisture content of calcined coke and for raw petroleum coke (after initial drying). Samples obtained in **5.4.3.6** and **5.4.4.6** of IS : 1447 (Part 4)-1989* are used for this test.

2. METHOD A-1 DETERMINATION OF MOISTURE (AS RECEIVED) IN RAW PETROLEUM COKE

2.1 Apparatus

a) *Moisture Pan* — Non corroding metal pans of sufficient size so that the sample may be spread to a depth of not more than 25 mm with sides not more than 38 mm high.

b) *Balance* — A balance of sufficient capacity to weigh the sample and container with a sensitivity of 0·5 g.

c) *Oven* — Capable of being regulated at 104 to 110°C, preferably with forced draught air circulation.

2.2 Procedure — Take approximately 500 g of sample [*see* **5.2.2** of IS : 1447 (Part 4)-1989*] in the dried and weighed moisture pan and distribute the sample uniformly over the pan, being sure not to exceed a depth of 25 mm. Weigh quickly and place the pan containing the sample in the oven at a temperature of 107 ± 3°C. Dry for one and a half hours to constant mass. Weigh again and calculate the loss of mass and report as moisture content (as received) in the coke.

2.3 Calculation

Moisture content (as received), percent by mass $= \dfrac{M_2 - M_3}{M_2 - M_1} \times 100$

where

M_1 = mass in g of the empty moisture pan,

M_2 = mass in g of the moisture pan plus sample, and

M_3 = mass in g of the pan and sample after drying.

2.4 Reporting — Report the result to the first decimal place.

2.5 Precision — Results of duplicate test shall not differ by more than the following amounts:

Repeatability	*Reproducibility*
0·3	0·5

3. METHOD A-2 DETERMINATION OF MOISTURE IN RAW COKE (AFTER INITIAL DRYING) AND CALCINED PETROLEUM COKE

3.1 Apparatus

a) *Moisture Oven* — Ordinary drying oven having openings for natural air circulation and capable of maintaining temperature within 104° and 110°C.

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*Methods of sampling of petroleum and its products: Part 4 Sampling of petroleum coke for laboratory analysis.

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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b) *Crucible with Covers* — Porcelain, silica or platinum crucibles 23 to 25 mm in depth and 43 to 45 mm in diameter having a close fitting aluminium or platinum cover.

c) *Desiccator* — Any suitable desiccator with sulphuric acid (relative density 1·84) as desiccant.

d) *Scrubber* — 250 ml capacity sintered glass scrubber with sulphuric acid (relative density 1·84) as desiccant for drying air.

3.2 Procedure — Heat the crucible in the oven for half an hour, place the cover on the crucible and cool to room temperature in the desiccator. Weigh accurately and transfer about 1 g of sample and weigh again at once to minimize exposure. Remove the cover and place the crucible in the oven (104 to 110°C) through which dried air is passed. Close the oven and heat for one hour. At the end of the period open the oven and cover the crucible with the lid. Cool in the desiccator and weigh accurately as quickly as possible.

3.3 Calculation

$$\text{Moisture content, percent by mass} = \frac{M_2 - M_3}{M_2 - M_1} \times 100$$

where

M_1 = mass in g of the crucible,

M_2 = mass in g of the crucible plus sample before drying, and

M_3 = mass in g of the crucible plus sample after drying.

3.4 Reporting — Calculate the percentage loss and report the result as moisture percent in the sample passing 250 micron IS Sieve.

NOTE — Use the percentage of moisture in the sample for calculating the results of other analysis on dry basis.

3.5 Precision — Results of duplicate test shall not differ by more than the following amounts:

Repeatability	*Reproducibility*
0·1	0·2